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HOW TO RECOGNIZE WITH A HAND LENS THE GRUBS OF POPILLIA JAPONICA
NEWMAN, ANOMALA ORIENTALIS WATERHOUSE, ASERICA CASTANEA
ARROW, SERICA BRUNNEA LINNAEUS (AND SERICA SIMBIS)
1ST AND 2ND STAGES.

Prepared by Adam G. Böving

Bureau of Entomology

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U. S. Department of Agriculture

Main characters in common for all of the four species.

Dorsally the first six abdominal segments are divided, each into three setose bulges.

None of the legs is either reduced, or has an abnormally small number of joints (fig. 14).

The underside of the labrum has along its free margin a series of numerous transverse small ridges (Tr, figs. 5,6,7), distally a small plate with three or four toothlike spines (Ds, figs. 5,6,7), and centrally a bare area (Ps, figs. 5,6,7) surrounded by setae.

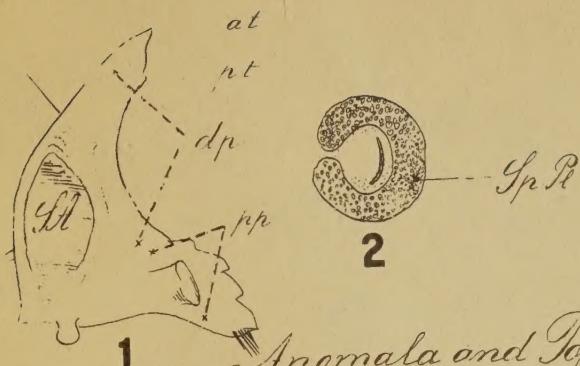
The distal cutting part (dp, figs. 1 and 3) of each mandible terminates with an oblique front edge, which edge anteriorly is prolonged into a long tooth (at, figs. 1 and 3) and posteriorly limited by a short tooth (pt, figs. 1 and 3); the rest of the distal part of the mandible is smooth and entirely without teeth.

Key showing the main characters by which the four species can be separated.

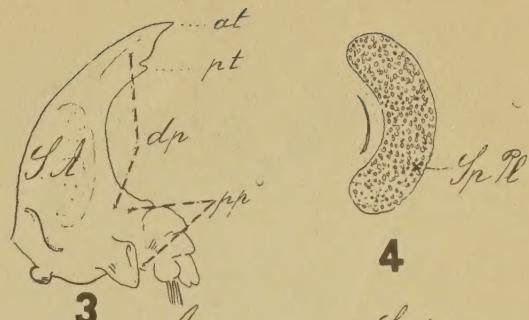
Anal opening Y-shaped (O, fig. 10). Raster (R, fig. 10) with a single transverse curved row of spines. With a single ocellus on each side of head, each appearing as a tiny black dot behind the antennal insertion. Spiracular breathing plate arcuate (SpPl, fig. 4), not at all approaching a ring in shape. Length of mature larva less than 3 centimeters (usually about 26 mm.).

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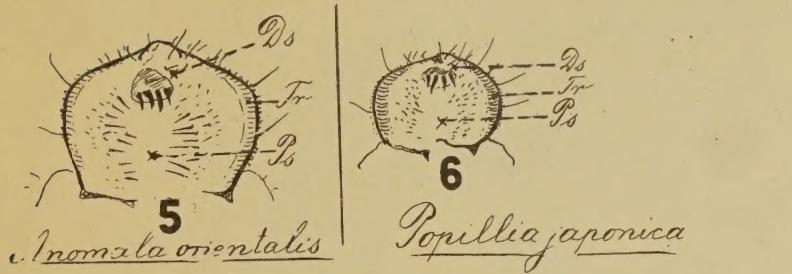
The labrum is almost symmetrical in the larva of Anomala orientalis but distinctly asymmetrical in the larvae of the other species of Anomala whose larvae are known.



Anomala and Popillia

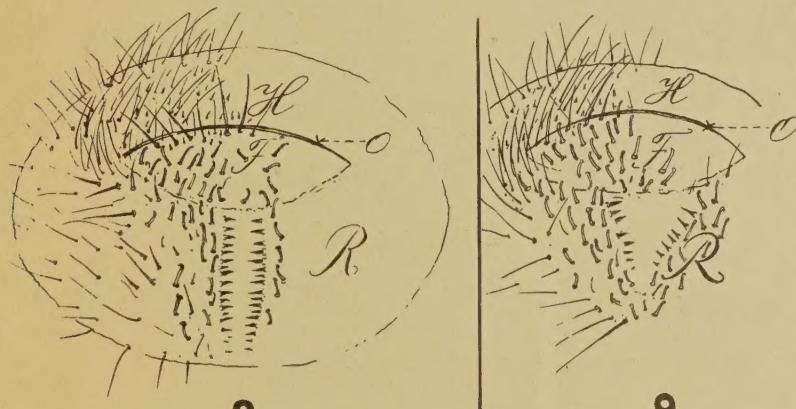


Aserica and Serica



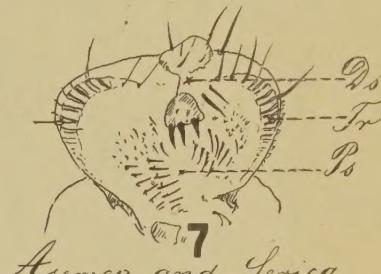
Anomala orientalis

Popillia japonica

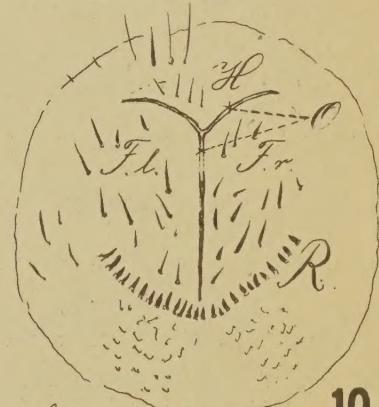


Anomala orientalis

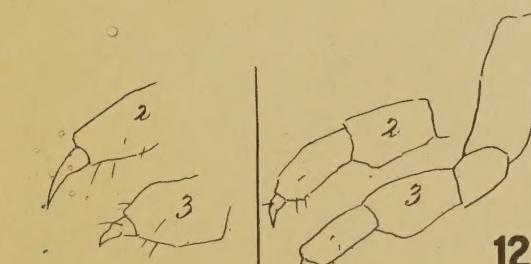
Popillia japonica



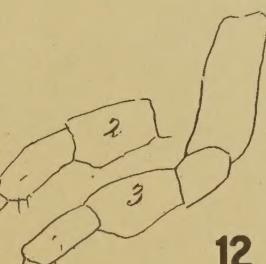
Aserica and Serica



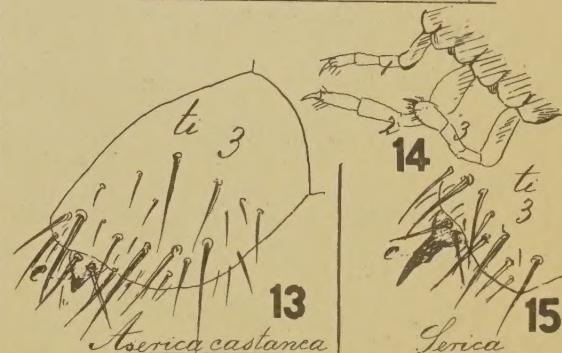
Aserica and Serica



Anomala orientalis



Popillia japonica



Drawn by Adele G. Bonner 24-X-28.

Serica brunnea

EXPLANATION OF FIGURES

Fig. 1.-Ventral view of right mandible, showing characteristic structures for Anomala and Popillia; Fig. 2.-Type of spiracular breathing plate characteristic of Anomala and Popillia; Fig. 3.-Ventral view of right mandible, showing characteristic structures for Aserica and Serica; Fig. 4.-Type of spiracular breathing plate characteristic of Aserica and Serica; Fig. 5.-Underside of labrum of Anomala orientalis; Fig. 6.-Underside of labrum of Popillia japonica; Fig. 7.-Underside of labrum, showing structures characteristic for Aserica and Serica; Fig. 8.-End view of apex of abdomen of Anomala orientalis; Fig. 9.-End view of apex of abdomen of Popillia japonica; Fig. 10.-End view of apex of abdomen, showing structures characteristic for Aserica and Serica; Fig. 11.-Apices of mid (2) and hind (3) legs of Anomala orientalis, showing difference in claws; Fig. 12.-Apices of mid (2) and hind (3) legs of Popillia japonica, showing similarity of claws; Fig. 13.-Apex of hind leg of Aserica castanea, showing short, inconspicuous claw; Fig. 14.-Fore (1), mid (2) and hind (3) legs of Serica brunnea; Fig. 15.-Apex of hind leg of Serica brunnea, showing long, conspicuous claw.

